LISTING OF CLAIMS

1. (Currently Amended) A nanostructure sensor for sensing a target species, comprising:

   at least one molecular nanostructure comprising at least one carbon nanotube;

   at least two conducting elements in electrical communication with the at least one nanostructure so as to define a conduction path including the at least one nanotube;

   a gate electrode disposed and configured to apply a selectable voltage so as to electrically influence a conductivity of the at least one nanotube;

   a polymer functionalization layer on the at least one nanostructure, the layer composed and configured to alter the electrical properties of the at least one nanotube from n-type to p-type response to gate voltage, so as to permit sensing the target species by a sensing signal including current flowing through the conduction path under the influence of at least one selected gate voltage during exposure to the target species; and

   passivation material covering at least regions in which there is electrical communication between the at least two conduction elements and the at least one nanostructure.

2. (Original) The nanostructure sensor of Claim 1, wherein the at least one nanostructure is selected from the group consisting of nanotubes, nanowires, nanofibers, and nanorods.

3. (Original) The nanostructure sensor of Claim 1, wherein the at least one nanostructure comprises a single-wall carbon nanotube.

4. (Original) The nanostructure sensor of Claim 1, wherein the at least two conducting elements comprise metal electrodes.

5. (Original) The nanostructure sensor of Claim 1, wherein the at least two conducting elements are in direct physical contact with the at least one nanostructure.

6. (Original) The nanostructure sensor of Claim 1, wherein the polymer layer is selected to interact with the target species.

7. (Original) The nanostructure sensor of Claim 1, wherein the polymer layer on the at least one nanostructure is discontinuous.

8. (Original) The nanostructure sensor of Claim 1, wherein the polymer layer comprises more than one material.

9. (Previously Presented) The nanostructure sensor of Claim 1, wherein the target species comprises ammonia and the polymer layer comprises polyethylimine.

10. (Previously Presented) The nanostructure sensor of Claim 1, wherein the particular species comprises hydrogen and comprises polyethylimine.

11-18. (Canceled)

19. (Previously Presented) The nanostructure sensor of Claim 1, wherein the at least one molecular nanostructure comprises one or more structures selected from the group consisting of nanotubes, nanorods, nanofibers or nanowires.

20. (Previously Presented) The nanostructure sensor of Claim 1, wherein the polymer functionalization layer comprises a material providing an increase in response of the sensor to at least the target species.

21. (New)   The nanostructure sensor of Claim 1, wherein the conduction path includes a plurality of carbon nanotubes, and wherein the sensing signal includes conduction under the influence of a plurality or range of gate voltages.